
NAVY PUBLIC WORKS CENTER
NORFOLK, VIRGINIA
UTILITIES DEPARTMENT

STANDARD OPERATING PROCEDURE / JOB HAZARD ANALYSIS

TITLE

REPLACE/INSTALL SF6 SWITCH

PROCEDURE NUMBER

WC 624 HVE 081

SIGNED:_____

(DATE)

APPROVED:_____

(DATE)

SAFETY PROFESSIONAL:_____

(DATE)

MANAGEMENT OFFICIAL:_____

(DATE)

REVISION A

DISTRIBUTION

CODE	REV/DATE	REV/DATE	REV/DATE	REV/DATE	REV/DATE	REV/DATE	REV/DATE
601.C3							
620							
622							
610.E1							
622.3							

REVISIONS

REV	DESCRIPTION	SIGNATURE	DATE
A	Initial Issue.		

REPLACE/INSTALL SF6 SWITCH

Purpose:
Procedure to replace or install a SF6 or VACPAC switch.

Potential Energy Sources:
1. 34.5/11.5/4.16 kv cables connected, or to be connected, to switch.

Tool and PPE:
Tools: Auger truck, certified slings, chain hoists, machine casters, machine roll bars, rope, hand tools, high voltage tester. PPE: Nomex coveralls, Nomex hood, insulating rubber gloves, insulating rubber sleeves, hard hat, safety shoes, work gloves, safety glasses, and back brace if required by back injury prevention and control program. The class of rubber gloves and sleeves will depend on the exposure voltage as per the following: Class 0 - up to 1,000 volts, Class 1 - up to 7,500 volts, Class 2 - up to 17,000 volts, Class 3 - up to 26,500 volts, Class 4 - up to 36,000 volts.

References:
1. PWC Occupational Safety and Health Program Manual, PWCNORVAINST 5100.33E
2. Occupational Safety and Health Standards for General Industry (29 CFR PART 1910): Subpart I, Personnel Protective Equipment; Subpart R, Electrical Power Generation / Transmission / Distribution; Subpart S, Electrical
3. NFPA 70 E approach distances to exposed, energized, electrical conductors and circuit parts.
4. SOP WC 624 HVE 001, Set Up and Secure Bucket/Auger Truck
5. SOP WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)
6. SOP WC 622 HVE 007, Switchout And Switchback Energized Circuit

Procedures:
1. Operations personnel will deenergize the all primary circuits attached, or will be attached, to the switch per SOPs
    a) WC 622 HVE 007, Switchout and Switchback Energized Circuit
    b) WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)

2. Using a high voltage tester test the primary circuit's cables to verify they are deenergized. Before the conductors are checked, test the high voltage tester on a known energized circuit to verify the tester is working. Test each deenergized conductor separately, taking care not to cross phase during test. If voltage is detected, stop the test and (a) notify operations personnel that the circuit is still energized, (b) wait for operations personnel to correct the problem, (c) perform the deenergization verification test once again after WC 622 personnel finish switching operations and declare the cables deenergized. If no voltage is indicated, retest the high voltage tester to re-verify it is working properly. Wear Nomex coveralls, Nomex hood, safety glasses, safety shoes, insulating rubber gloves and sleeves, and hard hat while testing.

If the primary circuit's cables can not be accessed, then go to another transformer site on the same circuit, which has accessible conductors, and perform the deenergization verification test there.

3. The PPE for the work will include work gloves, safety shoes, safety glasses, and hard hats. Refer to the JHA for further information.

4. Set up auger truck. Refer to SOP WC 624 HVE 001, Set Up and Secure Bucket/Auger truck for details.

Outdoor Installation

5. Remove the anchor bolt nuts holding the switch cover in place. Using a certified sling, attach the switch cover to the auger truck's boom winch, lift, and place the cover out off the way.

6. Remove the existing switch.

a) Disconnect the cable elbow connectors from the switch. Identify the phases prior to removal.

b) Remove the anchor bolt nuts holding the switch cover in place.

c) Remove switch case ground connection.

d) Using a certified sling, attach the switch to the auger truck's boom winch. Lift and remove the switch. Set the switch on the stake body truck for transporting to storage/disposal site.

7. Install new SF6 switch.

a) Using a certified sling, attach the new switch to the auger truck's boom winch, lift, and put switch in place.

b) Connect the switch case ground connection.

c) Put on and tighten the anchor bolt nuts holding the switch cover in place.

d) Connect the cable elbow connectors from the switch using the phase identification made in Step 6.

8. Using a certified sling, attach the switch cover to the auger truck's boom winch, lift, and place the cover back in place. Replace the anchor bolt nuts and tighten them down.

Indoor Installation

5. Remove the anchor bolt nuts holding the switch cover in place. Using chain hoists, machine casters, machine roller bars, rope, Auger truck with certified sling, etc., remove the switch cover, if present, and move out of the way.

6. Remove the existing switch.

a) Disconnect the cable elbow connectors from the switch. Identify the phases prior to removal.

b) Remove the anchor bolt nuts holding the switch cover in place.

c) Remove switch case ground connection.

d) Using chain hoists, machine casters, machine roller bars, rope, Auger truck with certified sling, etc., move the switch outside the facility. Using a certified sling, attach the switch to the auger truck's boom winch. Lift and set the switch on the stake body truck for transporting to storage/disposal site.

7. Install new SF6 switch.

a) Using a certified sling, attach the new switch to the auger truck's boom winch, lift, and move the switch to the facility door, or place it inside the facility.

b) Using chain hoists, machine casters, machine roller bars, rope, Auger truck with certified sling, etc., move the switch in place.

c) Connect the switch case ground connection.

d) Put on and tighten the anchor bolt nuts holding the switch cover in place.

e) Connect the cable elbow connectors from the switch using the phase identification made in Step 6.

8. Using chain hoists, machine casters, machine roller bars, rope, Auger truck with certified sling, etc., move the switch cover, if present, back in place. Replace the anchor bolt nuts and tighten them down.

9. Operations personnel will energize the all primary circuits attached, attached to the switch per SOPs

a) WC 622 HVE 007, Switchout and Switchback Energized Circuit

b) WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)

END